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# A Road to Trust

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## Abstract

The authors explore the relationship between transaction costs and generalized trust. Using panel data from 2,100 households in 135 rural communities of the Philippines, the paper shows that where transaction costs are reduced (proxied by road construction), there is an increase in generalized trust. Consistent with the argument that generalized trust is built through repeated interactions, the authors find that the individuals most likely to engage in exchange exhibit an increase in trust after road construction. These results suggest that, rather than being an input to economic growth, trust might be a product of reduced transaction costs (which also favors growth).

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This paper—a product of the Social Development Department, Sustainable Development Network—is part of a larger effort in the department to understand the determinants of both formal and informal social capital. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at jlabonne@worldbank.org and rchase@worldbank.org.

# A Road to Trust[1]

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## 1. Introduction

It is often argued that, *ceteris paribus*, exchange is more frequent in more trusting countries and communities as there is less need for costly enforcement mechanisms. Consistent with this argument, generalized trust (*i.e.*, of people in general) has been shown to positively impact a wide range of economic phenomena. Countries with higher levels of generalized trust tend to, among others, experience higher rates of GDP growth (Knack and Keefer 1997; Zak and Knack 2001), have better institutions (La Porta et al. 1997), and be less corrupt (Uslaner 2002). Similarly, public goods are more widely available and better maintained in more trusting communities (Ostrom 2000).

In light of those findings, researchers have become interested in the determinants of trust.[2] A first school of thought treats trust as a predetermined characteristic and focuses on historical factors, such as religion and ethnic diversity to explain variation in trust levels. Cross-country regressions indicate that generalized trust tends to be lower in countries where hierarchical religions are dominant. Similarly, in more ethnically diverse countries and communities, trust is lower (Alesina and La Ferrara 2002; Leigh 2006).

A second school of thought acknowledges that trust is not stable through time and has looked at the role of social and market interactions in building trust (Bohnet and Huck

[2] This is especially important since, as noted by Sobel (2002), there is still some confusion between the causes and consequences of so-called 'social capital'.

2004). For example, Glanville and Paxton (2007) argue that: “encounters with persons who do not share one’s sociodemographic characteristics could be particularly important in gauging how much to trust people in general.” This is consistent with the argument that the spread of television (*i.e.*, an increase in the opportunity cost of time) erodes trust levels (Putnam 2000 and Olken 2006). Further, this might explain why suburbanization was responsible for part of the decline in social capital (trust being one of its components) in America (Putnam 2000), as it increases the cost of participating in social activities. Recent evidence from trust games suggests that trade frequency positively influences trust (Henrich et al. 2001; Huck et al. 2006). Following this line of argument, a potential avenue for building generalized trust is to increase both social and market face-to-face interactions with people outside one’s immediate circle. This could be achieved by reducing costs associated with those activities.

In this paper we analyze the relationship between a reduction in transaction costs and generalized trust. We use road construction as a proxy for reduction in transaction costs. We improve upon previous research on the determinants of trust by using panel data collected from 2,100 households in 135 rural communities of the Philippines in 2003 and 2006. As a result, we provide more reliable estimates by controlling for household and community fixed-effects in all regressions. It is important to note that our sample covers some of the poorest municipalities in some of the poorest provinces of the Philippines. About 72 percent of the sampled households were engaged in farming in 2003. Thus, our results should be interpreted as the role of reduced transaction cost on trust at the initial stages of development. Further, the Philippines is a very low trust environment. In 2001,

only 8.4 percent of Filipinos declare trusting people in general.[3] Among the countries for which similar data is available, only two countries (Brazil and Lesotho) have lower levels of generalized trust. For comparison, in neighboring Indonesia 41.7 percent of individuals declare trusting others.

Our analysis shows that road building is associated with an increase in generalized trust. The most conservative estimate indicates that building a road is associated with a 4.5 percentage point (62.5 percent of the baseline mean) increase in generalized trust. Those results are robust to allowing for selection on observables. There is, however, no relationship between road construction and bonding trust (*i.e.*, towards community members), presumably because roads increase interaction with outsiders, but they have no effect on the ease of interaction with community members. While we cannot directly test if increased interactions led to more trust, we show that access to markets improved in villages in which a road was built. Further, we find that, after road construction, individuals most likely to engage in exchange have larger increases in trust levels.

Our evidence suggests that the current literature on the positive impact of trust on growth might have overlooked the potential endogeneity of trust. Indeed, road construction (which generates reductions in transaction costs) promotes both growth and trust-building interactions. This is consistent with findings from Indonesia where, over the period 1985-1997, industrialization was associated with stronger social networks (Miguel et al. 2006).

[3] Data retrieved from http://www.worldvaluesurvey.org (accessed on 04/02/2008).

The paper is organized as follows. Section 2 presents some hypotheses on the determinants of trust. Section 3 describes the datasets used. General results are presented in Section 4. Section 5 explores empirically mechanisms through which roads increase trust. Section 6 concludes.

## *2. The Formation of Trust*

Theoretically, the links between trust and growth are constrained by the way one assumes how trust is built. If one treats trust as a predetermined characteristic, trust cannot be affected by growth and the causal link (if any) goes from more trust to more growth. However, if one acknowledges the role of interaction in building trust, growth can promote trust (or at least factors generating growth can also lead to more trust).

We now briefly discuss some testable hypotheses that arise from assuming that trust is built through interactions. Individuals live in a country composed of communities and various socioeconomic groups. We assume that one can easily distinguish between members of the various groups and that diversity is more pronounced between than within communities.

Trust is built through interactions. Specifically, trust toward a given group goes up with the number of face-to-face interactions with members of that group. An individual generalized trust level is equal to the (weighted) average of trust toward the different socioeconomic groups. The same applies to trust toward community members.

Individuals engage in face-to-face trade both with members of their community and individuals living in neighboring communities. Trade with the latter category is constrained by the transaction cost of interactions between the two communities. Thus, a reduction in transaction cost between two communities will lead to an increase in trade. As a result, having assumed that diversity is more pronounced between than within communities, individuals will engage in exchange with member of groups with which they have no prior history of interactions. This will build generalized trust.

Available evidence indicates that rural roads might lead to more interactions. In Vietnam, rural road construction and rehabilitation had a positive impact on both the presence and the frequency of markets (Mu and Van de Walle, 2007). Further, in Bangladesh, rural roads led to significant savings of household transport expenses (Khandker et al. 2006). Some evidence also suggests that rural roads positively affect consumption through higher wages and higher output prices. Those impacts might take longer to materialize, however.

## *3. The Setting and the Data*

### *3.1. The Data*

We use a panel dataset that was collected in rural communities of the Philippines in the fall of 2003 and 2006. The sample covers 2,100 households in 135 villages (in 16 municipalities) of the Philippines. The data was collected for the impact evaluation of a

development project which targets resources to the poorest municipalities in the poorest provinces of the Philippines (Chase and Holmemo 2005).

We have information on whether each respondent trusts people in general (generalized trust) and trusts people in their village (bonding trust). The questions are similar to the usual World Value Survey question[4] : "*In general do you agree or disagree with the following statement: most people can be trusted.*" We follow Alesina and La Ferrara (2002) and classify individuals answering "agree somewhat" or "agree strongly" as trusting. Others are classified as being non-trusting. With this distinction, only 7.2 percent of individuals declared trusting strangers while 58 percent declared trusting members of their community in 2003.[5]

Information is available on the households' poverty status. We use information on asset ownership to build an asset index which serves as a measure of wealth (*asset*). We also use data on the highest level of schooling achieved by the household head (*No Edu, Primary, Secondary, College*) and on whether the household is engaged in farming (*Farmer HH*). Further, we have information on the religion and ethnic group of the household head. We aggregate this information at the village-level to obtain the following village estimates: measures of ethnic diversity and of inequality, the share of

[4] Responses to trust questions are correlated with real-life financial decisions (Karlan 2005) but there are some debates as to whether they measure trust or trustworthiness. Indeed, self-reported trust levels have been shown to be correlated with the second player behavior (i.e. trustworthiness) in a trust game but not always with the first player behavior (i.e. trust) in this game (Glaeser et al. 2000, Holm and Danielson 2005). However, recent findings from trust games suggest that behavior from the first player in a trust game does not necessarily capture trusting behavior but rather risk-aversion (Schechter 2007).

[5] Our village-level measures of trust are computed using the balanced panel of about 2,100 households.

households engaged in farming, the share who are Catholic, the share who are Muslim, and the average wealth and education levels in the community.

In addition, information was collected from elected village officials on infrastructure construction[6] in the communities between 2003 and 2006. We use this data to generate a dummy equal to one if a road was built over the period. To test whether other types of development projects other than roads have similar effects, we also use a dummy equal to one if a water system was built over the period. From now on, we refer to villages in which a road was eventually constructed as "*road villages*" and the other as "*non-road villages.*"

The roads considered are small rural roads (about 2km of length on average and usually in concrete) that represent major upgrades to existing dirt paths. They tend to be strategically located to deal with the segments that are either particularly treacherous or impassable during the rainy season. Indeed, a number of the villages in our sample were inaccessible by road at least for part of the year in 2003. Analysis of the first round of data indicates that only 56 percent of households were accessible by road all year long (Chase and Holmemo 2005).

[6] Despite the trend towards greater participation of communities, decision-making is sill controlled by local governments. This problem is especially acute for large projects such as roads since communities do not have access to the necessary financial and technical resources.

### *3.2. Where are roads constructed?*

We assess if prior to road construction, non-road villages in our sample were similar to road villages. This will help determine if what happened in those villages between 2003 and 2006 provides good estimates of what would have happened in road-villages had a road not been constructed there (*i.e.*, the counterfactual).

A priori, one might expect road and non-road villages to differ before road construction. If more trusting communities are more likely to trade, roads will generate higher benefits, so these higher trust communities should be more likely to request a road. Alternatively, isolated communities are more likely to benefit from a road and thus to request one. Those communities might also be less likely to be trusting, as they had little opportunities to interact with others outside of their communities.

We compare the 2003 distribution of generalized and bonding trust in road and non-road villages. Specifically, we test for equality of mean and equality of distribution using t and Kolmogorov-Smirnov tests. Results are presented in Table 1. They indicate that non-road villages provide an appropriate control group for road villages: there were no statistically significant differences between them in 2003.

We now turn our attention to broader determinants of the decision to construct a road. We regress a dummy, equal to one for road-villages, on a set of village characteristics[7] measured in 2003 (to deal with concerns over endogeneity). Regressions include municipal dummies. In addition, as standard errors might be correlated within a municipality, we compute standard errors robust to arbitrary covariance structure within municipalities. Results are presented in Table 2. The regressors do not jointly predict whether a road will be built in the village over the period (joint p-value from the OLS regression is 0.40).

These results suggest few systematic differences between road and non-road villages in 2003. This increases our confidence that non-road villages in our sample will provide unbiased estimates of the counterfactual. However, as a further robustness test we will also allow for selection on observables.

## *4. Does Reducing Transaction Costs Enhance Generalized Trust?*

In this section, we explore the relationship between road construction and changes in generalized trust. Specifically, we compare the changes in trust levels between road and non-road villages over the period 2003-2006. Our estimation strategy relies on panel data, which allows us to control for community fixed-effects.

[7] Share of households who are engaged in agricultural activities, whose head attended college or secondary school, whose head did not attend school, average wealth in the village and dummies for distance to municipal center.

The level $y_{jkt}$ of generalized trust in village *j* in municipality *k* at time *t* (t=0,1) is determined by:

$$y_{jkt} = \alpha * X_{jkt} + \beta * Road_{jkt} + u_{jk} + v_{kt} + w_{jkt} \quad (1)$$

where $\alpha$ and $\beta$ are coefficients to be estimated, $X_{jkt}$ is a vector of control variables that vary across villages and time, $Road_{jkt}$ is a dummy indicating the presence of a road linking village *j* to markets at time *t*, $u_{jk}$ is a common village-effect, $v_{kt}$ is a time effect common across all villages in municipality *k* at time *t* and, $w_{jkt}$ is the usual idiosyncratic error term, assumed to be independent of $X_{jkt}$, $Road_{jkt}$, $u_{jk}$ and $v_t$. Following the literature on the determinants of trust, the set of control variables $X_{jkt}$ includes a measure of ethnic diversity and of inequality, the share of households engaged in farming, the share who are Catholic, the share who are Muslims, and the average wealth and education levels in the community. All regressions include municipality dummies, and standard errors are robust to arbitrary covariance structure within municipalities.[8]

[8] Cluster-robust standard errors are downward biased when the number of cluster is small (less than 30).This might lead us to over-reject the null hypothesis of no effect. However, the village-level results presented here are consistent with the household-level results (in which we cluster standard errors at the village-level) discussed later. This increases our confidence in our results.

We estimate our equation above through first-differencing.[9] Specifically, we eliminate the time-constant unobservable *u* by differencing equation (1). After rewriting $c_k = (v_{k1} - v_{k0})$ and $d_{jk} = (w_{jk1} - w_{jk0})$, we obtain:

$$\Delta y_{jk} = \alpha * \Delta X_{jk} + \beta * \Delta Road_{jk} + c_k + d_{jk} \quad (2)$$

where $\Delta X_{jk}$ and $\Delta Road_{jk}$ are the change in the variables between t=0 and t=1. Results are presented in Columns 1-2 of Table 3.

Road building is associated with an increase in generalized trust. The most conservative estimate indicates that building a road is associated with a 4.5 percentage-point increase in generalized trust. This represents 62.5 percent of the baseline mean (7.2 percent). Following our hypotheses, a potential explanation is that building roads increases interactions with outsiders, who most likely have different socioeconomic characteristics. Those interactions in turn increase trust. Trust is therefore not fully historically determined but also the product of recent experiences.

A potential concern with our results is that they might capture mood effects associated with the benefits of receiving a development project rather than the benefits of being a road village. Indeed, in villages in which a development project was implemented over the period 2003-2006, respondents might have a brighter outlook on life and thus might be more likely to respond positively to our trust questions. We use two strategies to test

[9] With two time periods, the estimates are numerically identical to the fixed-effects (Wooldridge 2002).

for this possibility. First, we run the same regressions but replace our measure of generalized trust with a measure of bonding trust (Columns 3-4 in Table 3). Being a road-village does not lead to any statistically significant effect on bonding trust. This increases our confidence in our results. Indeed, if mood effects were responsible for the impact of road construction on generalized trust, it should also have an impact on bonding trust.

Second, we assess if the results hold for another type of development projects. As a result, we run regressions as above but include (i) a dummy indicating whether a water system was built in the village over the three year period and (ii) the number of development projects implemented in the village between 2003 and 2006 (excluding water systems and roads). We decide to single out water systems since, like rural roads, they are very common projects in the sampled areas and are likely to generate large household-level benefits. Results are presented in Table 3. There is no relationship between receiving a water project and generalized trust. A similar result is obtained with the number of development projects implemented in the village over the period.

We now allow for selection on observables using a method proposed by Hirano et al. (2003). This method starts by estimating the propensity score $\tilde{p}(X_{jk0})$ and then estimate equation (2) through Weighted Least Squares (WLS) with the weights being: $\omega_{jk} = \frac{Road_{jk1}}{\tilde{p}(X_{jk0})} + \frac{1 - Road_{jk1}}{1 - \tilde{p}(X_{jk0})}$. Results are presented in Column 3 of Table 3. Even when

we control for selection on observables road building is associated with an increase in generalized trust.

We also run equation (2) at the household-level. By looking at the change between 2003 and 2006 we are able to control for household-level fixed effects. All regressions include municipality dummies, and standard errors are robust to arbitrary covariance structure within villages. Results, available in Table 4, are consistent with village-level results. As a further test, we also control for trust levels in 2003 (to reduce concerns over regression towards the mean). Living in a road village still has a positive impact on trust levels.

As described above, a local development project was implemented in about half of the sample villages between the two survey rounds. This might affect the results. Thus, we run equation (2) again and include a dummy indicating whether the development project was implemented in the village. Results are consistent with the ones obtained previously.

## *5. Why Does Generalized Trust Increase?*

Having shown that generalized trust increases in road-villages, we now test if, consistent with our earlier hypotheses, this is because roads lead to more interactions. We intend to shed some light on those questions by assessing whether roads lead to (i) improved access to markets and (ii) more consumption. We run household-level regressions of the

determinants of change in access to markets[10] and in log monthly per capita consumption. All regressions include municipality dummies, and standard errors are robust to arbitrary covariance structure within villages. Results are available in Table 5. While living in a road village does not affect per capita consumption, it has a positive impact on access to markets. This is consistent with the argument that road construction positively affects trust through interactions.

To further understand if increased interactions explain the impact of road construction on generalized trust, we now assess whose trust levels increases after road construction. To do so, we run household-level regressions of the determinants of *changes* in generalized trust (as in Table 4) and introduce interactions terms. Specifically we are interested in assessing whether farmers gain more than non farmers, more educated individuals gain more than less educated ones and wealthier individuals gain more than poorer ones. We use data from 2003 to reduce endogeneity concerns. All regressions include municipality dummies and standard errors are robust to arbitrary covariance structure within villages. Results are available in Table 6.

First, road construction has a positive impact on trust levels of farming households. No such result is obtained for households not engaged in farming. This is consistent with the argument that roads increase trust through increased interactions as farmers are most likely to benefit from increased access to markets. Second, when we look at the role of education in explaining the response to road construction, our results indicate that more

[10]Our measure of access to markets is the response to the question "With respect to access to markets, would you say that you are better off now than three years ago? " (worse off, same, better off)

educated individuals (those with secondary school education) are more likely to trust more. We do not find such an effect on individuals with some college education. This might be due to the small proportion of such individuals in our sample.

## *6. Conclusion*

In this paper, we provide evidence that road construction is associated with increased trust levels. Using panel data on 135 communities in the Philippines, we show that in villages in which a road was built over the period 2003-2006, trust increased by 4.5 percentage points. The magnitude of this coefficient is quite large given the very low levels of generalized trust in the Philippines. Further, our household-level results suggest that this impact manifests through increased interactions with people outside the community. In our setting, reduced transaction cost (*i.e.*, road construction) are likely to lead to an increase in face-to-face interactions.

Finally, our results suggest that the current literature on the positive impact of trust on growth might have overlooked the potential endogeneity of trust. Indeed, reduced transaction costs promote growth and our results indicate that they also build trust. Further research is needed to understand if higher trust comes from economic growth (generated by reducing transaction costs) or comes directly from reduced transaction costs.

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## *Tables*

**Table 1**
**Comparing road and non-road villages in 2003**

| | Mean | | T-test | Kolmogorov |
|---|---|---|---|---|
| | Road | Non-road | Equality Means | Equality distribution |
| | (1) | (2) | (3) | (4) |
| Generalized trust | 0.0472 | 0.0787 | 1.49 | 0.167 |
| | (0.012) | (0.010) | [0.137] | [0.564] |
| Bonding trust | 0.5433 | 0.5868 | 1.25 | 0.240 |
| | (0.034) | (0.016) | [0.210] | [0.155] |

Note: The standard deviations are in parentheses (Column 1 – 2) and the p-value are in brackets (Column 3 - 4).

**Table 2**
**Where are Roads Constructed?**

| | OLS | Probit (Marginal Effects) |
|---|---|---|
| | (1) | (2) |
| Share in Agriculture | 0.037 | 0.038 |
| | (0.219) | (0.129) |
| Avg. Asset | -0.032 | -0.029 |
| | (0.057) | (0.038) |
| Share College | -0.088 | -0.036 |
| | (0.451) | (0.492) |
| Share Secondary School | 0.653 | 0.483 |
| | (0.339)* | (0.207)* |
| Share No Education | -0.323 | -0.109 |
| | (0.463) | (0.292) |
| Distance to town center (low) | -0.012 | -0.006 |
| | (0.038) | (0.031) |
| Distance to town center (medium) | 0.133 | 0.087 |
| | (0.095) | (0.067) |
| Municipal Dummies | Yes | Yes |
| Observations | 135 | 108 |
| Joint p-value | 0.40 | |
| R-squared | 0.26 | 0.24 (pseudo) |

Note: **Results from OLS (Column 1) and Probit (Column 2) regressions**. The dependent variable is a dummy equal to one if a road was built in the village between 2003 and 2006. Marginal effects computed at the mean. The standard errors (in parentheses) are Huber-corrected and account for intra-municipal correlation. * denotes significance at the 10% level, ** at the 5% and, *** at the 1%.

**Table 3**
**The Road to Trust – Village-level Results**

| | D Generalized Trust | | | D Bonding Trust | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Road | **0.045** | **0.051** | **0.050** | -0.029 | -0.026 |
| | **(0.013)*** ** | **(0.013)*** ** | **(0.017)*** ** | (0.051) | (0.058) |
| Water | | 0.024 | 0.026 | | -0.018 |
| | | (0.014) | (0.015) | | (0.040) |
| Nb Projects | | 0.005 | 0.003 | | 0.002 |
| | | (0.006) | (0.006) | | (0.012) |
| D Share in Agriculture | 0.027 | 0.025 | 0.028 | -0.136 | -0.132 |
| | (0.037) | (0.035) | (0.042) | (0.152) | (0.150) |
| D Inequality | -0.057 | -0.050 | -0.066 | 0.068 | 0.062 |
| | (0.035) | (0.040) | (0.038) | (0.140) | (0.145) |
| D Ethnic Diversity | 0.004 | 0.027 | 0.073 | -0.079 | -0.063 |
| | (0.072) | (0.065) | (0.073) | (0.166) | (0.166) |
| D Catholic | 0.308 | 0.347 | 0.321 | -0.183 | -0.233 |
| | (0.173)* | (0.171)* | (0.170)* | (0.277) | (0.299) |
| D Islam | -0.685 | -0.927 | -1.038 | 0.885 | 0.786 |
| | (1.151) | (1.081) | (1.227) | (2.913) | (3.015) |
| D Wealth | 0.007 | 0.007 | 0.003 | 0.021 | 0.017 |
| | (0.012) | (0.012) | (0.013) | (0.030) | (0.033) |
| D Education | -0.004 | -0.013 | -0.009 | -0.008 | -0.008 |
| | (0.009) | (0.009) | (0.011) | (0.023) | (0.026) |
| Municipal Dummies | Yes | Yes | Yes | Yes | Yes |
| Observations | 135 | 133 | 133 | 135 | 133 |
| R-squared | 0.49 | 0.52 | 0.51 | 0.19 | 0.20 |

Note: **Results from fixed-effects OLS (Column 1-2 and 4-5) WLS regressions (Column 3) .** The dependent variable is the change (2003-2006) in the proportion of villagers who trust strangers (Column 1-3).The dependent variable is the change (2003-2006) in the proportion of villagers who trust their neighbors (Column 4-5). The propensity score used to compute the weights for the WLS regression includes the control variables from Table 2. The standard errors (in parentheses) are Huber-corrected and account for intra-municipal correlation. * denotes significance at the 10% level, ** at the 5% and, *** at the 1%.

**Table 4**
**The Road to Trust – Household-level Results**

| | D Generalized Trust | | | D Bonding Trust | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| **Village-level Characteristics** | | | | | |
| Road | **0.057** | **0.056** | **0.025** | -0.011 | -0.005 |
| | **(0.018)*** ** | **(0.018)*** ** | **(0.012)** ** | (0.040) | (0.041) |
| Water | | 0.021 | 0.000 | | -0.028 |
| | | (0.019) | (0.011) | | (0.038) |
| Nb Projects | | 0.008 | 0.005 | | -0.007 |
| | | (0.005) | (0.003) | | (0.010) |
| D Share in Agriculture | 0.056 | 0.060 | 0.062 | -0.136 | -0.136 |
| | (0.071) | (0.073) | (0.041) | (0.125) | (0.124) |
| D Inequality | -0.023 | -0.029 | 0.004 | 0.087 | 0.082 |
| | (0.044) | (0.044) | (0.025) | (0.120) | (0.124) |
| D Ethnic Diversity | -0.076 | -0.048 | -0.010 | -0.055 | -0.065 |
| | (0.076) | (0.079) | (0.045) | (0.150) | (0.146) |
| D Catholic | 0.220 | 0.241 | 0.173 | -0.167 | -0.224 |
| | (0.118)* | (0.119)** | (0.079)** | (0.277) | (0.276) |
| D Islam | -0.973 | -1.270 | -0.606 | 1.318 | 1.510 |
| | (1.041) | (0.991) | (0.593) | (2.561) | (2.593) |
| **Household level Characteristics** | | | | | |
| D Wealth | 0.000 | 0.001 | -0.002 | -0.014 | -0.014 |
| | (0.004) | (0.004) | (0.002) | (0.008)* | (0.008) |
| D Education | 0.000 | 0.000 | 0.003 | 0.002 | 0.003 |
| | (0.004) | (0.004) | (0.002) | (0.005) | (0.005) |
| D age | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 |
| | (0.001) | (0.001) | (0.001) | (0.002) | (0.002) |
| Generalized Trust (2003) | | | -0.978 | | |
| | | | (0.017)*** | | |
| Municipal Dummies | Yes | Yes | Yes | Yes | Yes |
| Observations | 2041 | 2026 | 2026 | 2027 | 2012 |
| R-squared | 0.07 | 0.08 | 0.68 | 0.02 | 0.02 |

Note: **Results from fixed-effects OLS regressions**. The dependent variable is the household-level change (2003-2006) in generalized trust (Column 1-3). The dependent variable is the household-level change (2003-2006) in bonding trust. (Column 4-5). The standard errors (in parentheses) are Huber-corrected and account for intra-village correlation. * denotes significance at the 10% level, ** at the 5% and, *** at the 1%.

**Table 5**
**Road Construction, Expenditures and Access to Markets**

| | D ln(p.c. monthly cons) | | Access Markets | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Road | 0.003 | 0.017 | **0.098** | **0.113** |
| | (0.032) | (0.028) | **(0.050)*** | **(0.047)**** |
| D Wealth | | 0.050 | | 0.012 |
| | | (0.007)*** | | (0.010) |
| D Age | | 0.000 | | 0.009 |
| | | (0.005) | | (0.006) |
| D HH size | | -0.001 | | 0.003 |
| | | (0.002) | | (0.002) |
| D Edu | | -0.128 | | -0.019 |
| | | (0.007)*** | | (0.008)** |
| D Land Owner | | 0.035 | | 0.037 |
| | | (0.022) | | (0.032) |
| Municipal Dummies | Yes | Yes | Yes | Yes |
| Observations | 2067 | 2042 | 2067 | 2042 |
| R-squared | 0.03 | 0.20 | 0.10 | 0.10 |

Note: **Results from fixed-effects OLS regressions**. The dependent variable is the household-level change (2003-2006) in log monthly per capita consumption (Column 1 – 2) and in access to markets (Column 3 – 4). The standard errors (in parentheses) are Huber-corrected and account for intra-village correlation. * denotes significance at the 10% level, ** at the 5% and, *** at the 1%.

**Table 6**
**Who Trusts More after Road Construction?**

| | D Generalized Trust | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| Road*Farmer HH | **0.060** | | |
| | **(0.019)*** ** | | |
| Road*Not Farmer HH | 0.051 | | |
| | (0.032) | | |
| Road*Secondary School | | **0.124** | |
| | | **(0.035)*** ** | |
| Road*College | | 0.052 | |
| | | (0.056) | |
| Road*Primary School | | 0.034 | |
| | | (0.024) | |
| Road*No Education | | 0.110 | |
| | | (0.079) | |
| Road*Wealth | | | -0.004 |
| | | | (0.007) |
| Municipal Dummies | Yes | Yes | Yes |
| Observations | 2026 | 2026 | 2026 |
| R-squared | 0.08 | 0.08 | 0.08 |

Note: **Results from fixed-effects OLS regressions**. The dependent variable is the household-level change (2003-2006) in generalized trust. All regressions include the set of explanatory variables in Column 2 of Table 4. Regressions also include a dummy indicating whether the household was engaged in farming in 2003 (Column 1); dummies indicating the household head educational achievements in 2003 (Column 2) and, the road dummy and the level of household wealth in 2003 (Column 3). The standard errors (in parentheses) are Huber-corrected and account for intra-village correlation. * denotes significance at the 10% level, ** at the 5% and, *** at the 1%.